



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,804	06/12/2006	Kiyotaka Matsuda	KOD177B.001APC	6973

20995 7590 12/24/2009
KNOBBE MARTENS OLSON & BEAR LLP
2040 MAIN STREET
FOURTEENTH FLOOR
IRVINE, CA 92614

EXAMINER

MOMPER, ANNA M

ART UNIT	PAPER NUMBER
----------	--------------

3657

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

12/24/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
eOAPilot@kmob.com

Office Action Summary	Application No. 10/595,804	Applicant(s) MATSUDA ET AL.	
	Examiner ANNA MOMPER	Art Unit 3657	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-12 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-12, 14-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Amendment to the claims received 9/18/2009 and 8/06/2009 have been entered. Claims 2, 4, 6, 10 and 12 have been amended. Claims 14-16 have been added.

Response to Arguments

2. Applicant's arguments with respect to claims 1 and 10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 2-12, and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakamoto (JP 56-159143 A) in view of Fujita (US 6,216,853) and Kimura (JP 10-184808 A) and Ueda et al. ("Noise and Life of Helical Timing Belt Drives") and Onoe et al. (US 4,790,802).

As per claim 2-3 and 10-11, Sakamoto discloses a belt comprising:
a back layer (Fig. 5);
teeth (8) configured to be engaged with a pulley; and
core cords (3) embedded between the back layer and the teeth and aligned in the longitudinal direction of the belt for reinforcing the belt (Fig. 5), and no canvas is formed on the helical teeth nor on a surface between the helical teeth (Fig. 5), wherein the belt is created by wrapping the core cords (3) around and in contact with a cylindrical mold (2) having female helical teeth (1) and injecting a raw material (5) into a cavity between the cylindrical mold and an outer cylinder mold (4) enclosing the cylindrical mold (Fig. 2).

Sakamoto discloses the belt being formed of a belt molding raw material (abstract) but is silent as to what material is used.

Fujita discloses a toothed belt (1) having a body (1A) and teeth (2) being made from urethane resin (Col. 4, Ln. 17-24).

It would have been obvious to one having ordinary skill in the art at the time the invention to modify the belt of Sakamoto to make the back layer and teeth of the belt made of urethane resin, as taught by Fujita, for increasing thermal and strength properties. Also note *In re Leshin*, 125 USPQ 416, and that it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.

Sakamoto fails to explicitly disclose the teeth being helical and substantially all of the core cords are twisted at an angle opposing to an angle of helical teeth.

Kimura discloses a belt (1) having helical teeth with a helical tooth angle formed by a tooth inclination line of each helical tooth and a line perpendicular to a longitudinal direction of the belt (α) and core cords (2), and wherein all of the core cords are twisted in a single direction at a twist angle which is formed by a twist inclination line of each core cord and a line parallel to a longitudinal direction of the core cords (β),

wherein a direction of the tooth inclination line and a direction of the twist inclination line are opposite to each other with respect to the line perpendicular to the longitudinal direction of the belt, at (Fig. 2, core cords are twisted using an S-twist or Z-twist such that all wires are twisted in the same direction, and wherein the angle of twist of the core cords is opposing an angle of inclination 10a of the helical teeth).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the belt of Sakamoto to include helical teeth and the core cords being twisted at an angle opposite the angle of the helical teeth, as taught by Kimura, for the purpose of reducing noise and vibrations.

Modified Sakamoto fails to explicitly disclose a helical tooth angle set between 5° and 15° (claim 2 and 10) or more specifically, a tooth angle of 10°, 7°, or 5° (claim 3 and 11).

Ueda et al. discloses a helical synchronous belt having core cords (Pg. 274, "2. Forms and Dimensions of Test Belts and Pulleys", Ln. 4-5) and a helical tooth angle set to 3, 5 or 10° (Pg. 274, "2. Forms and Dimensions of Test Belts and Pulleys", Ln. 5-8).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the belt of Modified Sakamoto to include the helical tooth angle set between 5° or 10°, as taught by Ueda et al. for the purpose of reducing noise.

Modified Sakamoto fails to explicitly disclose a core cord twist angle set to 15° to 2° (Claim 2 and 10), or more specifically 10.2° or 4.8°(claim 3 and 11).

Onoe et al discloses an transmission belt (1) having reinforcement cords (6) and an equation to determine the twist angle of the reinforcement cords based on twists per 10 cm and diameter of the end load carrier to determine angle of twist, wherein this

equation recites $\tan \gamma = \frac{(100 / T_p)}{(\pi \times G_p)}$ where G_p is the diameter of the load carrier in mm and

T_p is the twist in twists/10 cm (Fig. 1, Fig. 2, Col.3, Ln. 10-41). Onoe et al. does not explicitly disclose the core cord twist angle set between 15° to 2° or 10.2° or 4.8°, However, Onoe et al. discloses a relationship between oscillation of the belt and the angle of final twist (Fig. 7, Fig. 9).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the belt of Modified Sakamoto to include a core cord twist angle set between 15° to 2° or 10.2° or 4.8°, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233. Further, it would be obvious to change the core cord twist angle to reduce oscillation of the belt.

As per claims 4, 6 and 12, Ueda et al. further discloses the core cords being made of glass fiber (Pg. 274, "2. Forms and Dimensions of Test Belts and Pulleys", Ln. 4-5).

As per claims 5 and 7, Ueda et al. also discloses the use of the helical synchronous belt in a driving carriage (Pg. 274, "1. Introduction", Ln. 1-3).

As per claims 8 and 9, Ueda et al. also discloses the use of the helical synchronous belt in a driving carriage (Pg. 274, "1. Introduction", Ln. 1-3).

As per claims 14-16, Onoe et al. further discloses that aramid fibers may be used for the core cords (Col. 3, Ln. 52-54).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANNA MOMPER whose telephone number is (571)270-5788. The examiner can normally be reached on M-F 6:00-3:30 (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Siconolfi can be reached on (571) 272-7124. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3657

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

am

/Robert A. Siconolfi/
Supervisory Patent Examiner, Art
Unit 3657